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[Claim(s)]

[Claim 1]An emulsion composition containing coenzyme Q_{10}, an oil phase component, a polyhydric alcohol, and an emulsifier.

[Claim 2]After mixing a solution which dissolved coenzyme Q_{10} in an oil phase component, and dissolved an emulsifier subsequently to this solution and polyhydric alcohol, An emulsion composition by which emulsification dispersion was carried out into a multivalent alcoholic phase which an oily phase which consists of an oil phase component which consists of carrying out emulsification, and which dissolved coenzyme Q_{10} turns into from a polyhydric alcohol which dissolved an emulsifier.

[Claim 3]The emulsion composition containing 0.1 to 50weight % of coenzyme Q_{10} and 0.1 to 50weight % of an oil phase component, 1 to 90weight % of a polyhydric alcohol, and 0.1 to 50weight % of an emulsifier according to claim 1.

[Claim 4]Claim 1 whose oil phase component is medium-chain-fatty-acid ester thru/or the emulsion composition according to claim 3.

[Claim 5]The emulsion composition according to claim 4 whose medium-chain-fatty-acid ester is cane sugar acetic acid isobutyric acid ester.

[Claim 6]After mixing a solution which dissolved coenzyme Q_{10} in an oil phase component, and dissolved an emulsifier subsequently to this solution and polyhydric alcohol, A manufacturing method of an emulsion composition by which emulsification dispersion was carried out into a multivalent alcoholic phase which an oily phase which consists of an oil phase component which consists of carrying out emulsification, and which dissolved coenzyme Q_{10} turns into from a polyhydric alcohol which dissolved an emulsifier.

[Claim 7]An oil-in-water type emulsion composition containing coenzyme Q_{10} which made water distribute Claim 1 thru/or the emulsion composition according to claim 5.

[Claim 8]A manufacturing method of an oil-in-water type emulsion composition which consists of making water distribute an emulsion composition produced by carrying out emulsification after mixing a solution which dissolved coenzyme Q_{10} in an oil phase component, and dissolved an emulsifier subsequently to this solution and polyhydric alcohol.

[Claim 9]A capsule containing Claim 1 thru/or the emulsion composition according to claim 5.

[Claim 10]An eating-and-drinking article, drugs, quasi drugs, cosmetics, and feed for animals which added a capsule indicated to an emulsion composition indicated to Claim 1 thru/or Claim 5, or Claim 7, or Claim 9.

[Detailed Description of the Invention]
[0001]
[The technical field to which an invention belongs] [this invention] [about the manufacturing method of the emulsion composition containing coenzyme Q_{10} of difficulty water solubility, and this emulsion composition] It is related with use for the foodstuffs of the method of preparing the oil-in-water type emulsion composition which furthermore contains coenzyme Q_{10} in high concentration, this emulsion composition, and this oil-in-water type emulsion composition, drugs, quasi drugs, the feed for animals, and cosmetics.
[0002]
[Description of the Prior Art]Coenzyme Q_{10} is ubiquinones with an isoprene unit of the side chain of ubiquinone:2,3-dimethoxy- 5-methyl-6-poly pre ****- 1,4-benzoquinone peculiar to Homo sapiens of 10. This coenzyme Q_{10} Ubidecarenone or coenzyme UQ_{10} is called and it is indicated by the Pharmacopoeia of Japan. This coenzyme Q_{10} is made indispensable as a coenzyme at production of adenosine triphosphate in a mitochondrion, and the efficacy over cardiopathy, hypertension, and a rheumatic valve disease, etc. are checked by raising an immune function. It inquires also about the efficacy over fasset inflammations.
[0003]Thus, coenzyme Q_{10} is considered to be a substance with high safety which has high physiology activity and exists in the living body. However, coenzyme Q_{10} is difficulty water solubility, and simultaneously, since crystallinity is high, difficulty generally follows it on pharmaceutical preparation-ization by emulsification. Even if it once prepared the emulsion composition, crystallization of coenzyme Q_{10} took place within several days, and the phenomenon which an emulsion composition separates or an emulsion composition solidifies was seen. In order to secure the effect as pharmaceutical preparation, concentration of coenzyme Q_{10} needed to be made high, but pharmaceutical-preparation-izing was difficult because of such difficulty water solubility and high crystallinity.
[0004]
[Problem to be solved by the invention]Therefore, the elucidation of the manufacturing method of the emulsion composition which can emulsify easily coenzyme Q_{10} with difficult pharmaceutical-preparation-izing and, by which the crystal deposition after emulsification was prevented which contains coenzyme Q_{10} in high concentration, and this emulsion composition is called for.

[0005]
[The means for solving an invention] Coenzyme Q_{10} is difficulty water solubility, and this invention persons take an example by the point that pharmaceutical-preparation-izing by emulsification is difficult

for high crystallinity, [by considering it as the emulsion composition containing coenzyme Q_{10}, an oil phase component, a polyhydric alcohol, and an emulsifier, as a result of inquiring wholeheartedly in order to solve the above-mentioned technical problem] The crystal deposition after emulsification could be prevented, it found out that high concentration could be made to contain coenzyme Q_{10} in an emulsion composition, and this invention was completed. That is, this invention relates to the emulsion composition containing coenzyme Q_{10}, an oil phase component, a polyhydric alcohol, and an emulsifier.

[0006]After mixing a solution which this invention dissolved coenzyme Q_{10} in an oil phase component, and dissolved an emulsifier subsequently to this solution and polyhydric alcohol, An oily phase which consists of an oil phase component which consists of carrying out emulsification, and which dissolved coenzyme Q_{10} is related also with an emulsion composition which carried out emulsification dispersion into a multivalent alcoholic phase which consists of a polyhydric alcohol which dissolved an emulsifier, or its manufacturing method. This invention dissolves coenzyme Q_{10} in an oil phase component, and after it, subsequently to a polyhydric alcohol, mixes this solution and a solution which dissolved an emulsifier, it relates also to an oil-in-water type emulsion composition which consists of making water distribute an emulsion composition produced by carrying out emulsification, and its manufacturing method further again.

[0007]And this invention relates also to a capsule produced by enclosing with a capsule an emulsion composition obtained from the above-mentioned place. [that is, an oily phase which this invention becomes from an oil phase component which dissolved coenzyme Q_{10}] An emulsion composition which consists of coenzyme Q_{10} which carried out emulsification dispersion into a dispersion medium which is a multivalent alcoholic phase which consists of a polyhydric alcohol which dissolved an emulsifier, an oil phase component, a polyhydric alcohol, and an emulsifier, It is related with that manufacturing method, a capsule which encapsulated this emulsion composition, an oil-in-water type emulsion composition produced by adding this emulsion composition in water and an eating-and-drinking article containing these, drugs, quasi drugs, cosmetics, and feed for animals.

[0008]

[Mode for carrying out the invention]The method of preparation of the emulsion composition of this invention dissolves coenzyme Q_{10} in an oil phase component, and ranks second, and after mixing this solution and the solution which dissolved the emulsifier in the polyhydric alcohol, emulsification of it is carried out. Emulsification can be performed using the paddle type mixer etc. which agitate, the usual emulsification device, for example, small shear power. Even if it uses large devices of shear power, such as a horse mackerel gay mixer, a colloid mill, and a high-pressure emulsifier, or the emulsification device which can carry out load of the emulsification pressure the pressure of 100 kg / more than cm^2, it does not interfere at all.

[0009]As an oil phase component used as a base which dissolves coenzyme Q_{10}, although the oil phase component of an ester system, the oil phase component of a hydrocarbon system, animal and vegetable oils, silicone, etc. are mentioned, especially if it is an oil phase which can generally be used for foodstuffs, drugs, the feed for animals, cosmetics, etc., it will not be restricted.

[0010]As an oil phase component of an ester system, medium-chain-fatty-acid ester, for example,

methyl caprylate, Medium-chain-fatty-acid alkyl ester, such as isooctaneacid propyl, isooctaneacid Sept Iles, and butyl caprate, Ethylene glycol monocaprylate, JIKAPURIRU acid ethylene glycol, Medium-chain-fatty-acid ethylene glycol ester, such as monoisooctaneacid ethylene glycol and JIISO ethylene glycol octanoate, Propylene glycol monocaprylate, JIKAPURIRU acid propylene glycol, Monoisooctaneacid propylene glycol, JIISO propylene glycol octanoate, Medium-chain-fatty-acid propyleneglycol ester, such as JIKAPURIN acid propylene glycol, Monocaprylic acid glyceryl, monocapric acid glyceryl, bird caprylic acid glyceryl, bird capric acid glyceryl and a bird (mixed capric acid caprylic acid glyceryl.) Medium-chain-fatty-acid sorbitol ester [, such as medium-chain-fatty-acid sorbitan ester /, such as medium-chain-fatty-acid glycerol ester, such as bird isooctaneacid glyceryl monocaprylic acid sorbitan, and JIKAPURIRU acid sorbitan, /, sorbitol, hexacaprylate,] and tetraglycerol monocaprylate, Cane sugar medium-chain-fatty-acid ester, such as medium-chain-fatty-acid polyglycerin ester, such as tetrahexacaprylate glyceryl, and cane sugar acetic acid isobutyric acid ester, is mentioned. In these, cane sugar medium-chain-fatty-acid ester, such as cane sugar acetic acid isobutyric acid ester, It is desirable from solubility [as opposed to coenzyme Q_{10} in medium-chain-fatty-acid sorbitan ester, medium-chain-fatty-acid ethylene glycol ester, medium-chain-fatty-acid propyleneglycol ester, and medium-chain-fatty-acid glycerol ester] being good. Sucrose fatty acid ester makes a cane sugar portion a hydrophilic group, is also a surface active agent which makes a fatty acid portion a lipophilic group, and obtains it, and what is called higher fatty acids, such as stearic acid, palmitic acid, and oleic acid, and lower fatty acid, such as acetic acid and isobutyric acid, are among the fatty acid used. Cane sugar is one sort of a polyhydric alcohol with eight hydroxyl groups, it is that in which fatty acid carried out the ester bond to this hydroxyl group, and the thing of a higher fatty acid is a mixture of mono- ** JI and triester. Cane sugar acetic acid isobutyric acid ester which is a thing of lower fatty acid is what esterified the hydroxyl group of cane sugar with the acetic acid group and the isobutyric acid group, and is also called SAIB for short.

[0011]As an oil phase component of a hydrocarbon system, liquid paraffin, squalene, or squalane is mentioned, for example. as animal and vegetable oils -- soybean oil, oleum rapae, cotton seed oil, sunflower oil, safflower oil, cocoanut oil, a wheat germ oil, cone germ oil, olive oil, rice bran oil, liver oil, fish oil, whale oil, and cuttlefish oil -- it pulls and ******** etc. are mentioned. These oil phase components are independent, or may be used combining two or more sorts.

[0012][as a polyhydric alcohol which works as a dispersion medium of the oil phase component used for this invention] Ethylene glycol, diethylene glycol, polyethylene glycol, Propylene glycol, dipropylene glycol, polypropylene glycol, glycerol, diglycerol, polyglycerin, 3-methyl-1,3-butanediol, 1,3-butylene glycol, etc. are mentioned. In the range which is independent, may mix two or more sorts, or does not spoil the characteristics of an emulsion composition by a case, these can add water and can also use it as an aqueous solution. In addition to a liquefied polyhydric alcohol, a crystal-like polyhydric alcohol can also add water in the range which does not spoil the characteristics of an emulsion composition, can make it liquefied, and can be used for this invention. As these examples, cane sugar, such as fruit sugar and a grape, sorbitol, trehalose, etc. are mentioned. These polyhydric alcohols are independent or may be used combining two or more sorts.

[0013]As an emulsifier used for this invention, a ten or more HLB surface active agent is [HLB] preferably suitable eight or more, Specifically Propylene glycol fatty acid ester, a glycerine fatty acid ester, Polyglyceryl fatty acid ester, a sorbitan fatty acid ester, polyoxyethylene sorbitan fatty acid ester, Polyoxyethylene sorbitol fatty acid ester, polyoxyethylene glycerine fatty acid ester, Polyoxyethylene

alkyl ether, polyoxyethylene fatty acid ester, Polyoxyethylene hydrogenated castor oil, polyoxyethylene castor oil, a polyoxyethylene polyoxypropylene copolymer, Polyoxyethylene polyoxypropylene alkyl ether, dextrin fatty acid ester, Sugar system surface active agents, such as polyether denaturation silicone lauric acid alkanolamide, alkylamine oxide, hydrogenation soybean phospholipid, enzymatically decomposed lecithin, lecithin, saponin, and sucrose fatty acid ester, etc. are mentioned. Polyglyceryl fatty acid ester, dextrin fatty acid ester, and sucrose fatty acid ester can use conveniently especially in these. A water soluble polymer can also be used as an emulsifier. As a water soluble polymer, for example Polyacrylate, a polymethacrylic acid salt, Polycarboxylic acid salts, such as an acrylic acid alkyl methacrylate copolymer, Synthetic water soluble polymers, such as polyvinyl alcohol, carboxymethylcellulose, Semisynthesis water soluble polymers, such as hydroxyethyl cellulose, cation-ized starches, and those alkyl modified things, Natural system water soluble polymers, such as those alkyl modified things, such as a starch, dextrin, sodium alginate, chitosan, gum arabic, xanthan gum, and a guar gum, are mentioned.

[0014][each compounding ratio of the emulsion composition which constitutes this invention] As long as a nonaqueous emulsion composition can be formed, are not limited in particular, but. Q_{10}0.1 to 50 weight % of coenzymes, 0.1 to 50 weight % of oil phase components, Although the range of 1 to 90 weight % of polyhydric alcohols and 0.1 to 50 weight % of emulsifiers is preferred, especially the range of Q_{10}0.1 to 40 weight % of coenzymes, 0.1 to 45 weight % of oil phase components, 1 to 90 weight % of polyhydric alcohols, and 0.1 to 50 weight % of emulsifiers is preferred.

[0015]A higher alcohol, fatty acid, an ultraviolet ray absorbent, fine particles, a pigment, sugar, a high molecular compound, a bioactive component, a solvent, an antioxidant, perfume, antiseptics, etc. can be blended with the emulsion composition of this invention in the range which does not spoil the effect of this invention besides the above-mentioned essential ingredient. [what is used as an additive of further others] Coenzyme Q_9, coenzyme Q_{11}, etc. with a similar structure of a coenzyme Q family, And it is possible to control crystal deposition further by the compound etc. which have isoprenoid skeletons, such as vitamin-E and vitamin K_1 and vitamin K_2, having polyhydric alcohol high order ester etc., and adding these.

[0016]It is also possible to fill up a capsule with the emulsion composition of this invention, and when a capsule collapses in a water atmosphere, a content distributes immediately in water. This will be characterized by distributing immediately and a small amount of water being in an emulsion state uniformly, and the capsule which has the outstanding water-dispersion function which is not until now will be provided.

[0017]Enclosing with a soft capsule can also enclose the emulsion composition of this invention with a hard capsule. The encapsulation enclosed with a soft capsule can be performed using gelatin as a coat formation agent. Into gelatin, the additive used for the usual soft capsules, such as sorbitol and glycerol, can be added. As a process of a soft capsule, there are dip coating, the piercing method, a dropping test, etc. which perform molding of a capsule and restoration of contents liquid simultaneously. After the general piercing method spreads thinly, and it cools and it subsequently gels a gelatin solution, use it as a gelatin sheet, and it puts in preparation liquid between the gelatin sheets of two sheets, and presses this from both sides by a metal pattern, An emulsion composition is poured into the inside of a capsule, and after carrying out heating adhesion and piercing a gelatin sheet immediately, the soft capsule which uses an emulsion composition as a content can be obtained by making it dry.

[0018]The encapsulation enclosed with a hard capsule consists of enclosing with the hard capsule which serves as a body of a cylindrical shape from two portions with a little large cap of a diameter from this. in this case, a cap is put, and the ****** part of a cap and a body is stopped, and be required, after pouring an emulsion composition into a body -- a hard capsule with little oxygen permeability can be obtained by carrying out the seal of the crevice between foolish **** parts. This emulsion composition can obtain the oil-in-water type emulsion composition which contains coenzyme Q_{10} easily by adding to water. In this case, a surface active agent, other vitamins, etc. of low HLB [******** / other / additive] may be added.
[0019]
[Working example]Although an embodiment is given to below and this invention is concretely explained to it, this invention is not limited to these.
It is made to dissolve in 30 g of cane sugar acetic acid isobutyric acid ester (made by Nagase Chemtex [Corp.] Corp.) which is the oil phase which warmed Q_{10}(made by NISSHIN PHARMA, INC., INC.) 10 g of preparing method coenzyme of Embodiment 1 (1) sample at 60 **. Subsequently, 60 ** is made to warm and dissolve 5 g of monostearin acid decaglyceryl (deca green 1-S: made in Nikko Chemicals) which is an emulsifier in 55 g of glycerol (Nippon Oil & Fats Co., Ltd.) which is a polyhydric alcohol, It mixes gradually, agitating an oil phase which dissolved coenzyme Q_{10} of this solution and the point. Emulsification of what dissolved this coenzyme Q_{10} was carried out by an emulsification pressure of about 100 kg using an emulsifier (the Sanwa Machinery company make H-11 type), and an emulsion composition of this invention was obtained. By adding the emulsion composition 10g furthermore obtained to 90 ml of water, and agitating it, it is an oil-in-water type emulsion composition. 100 g was obtained.
[0020](2) Viewing estimated a state one week after a state one week after a state of an emulsion composition immediately after valuation method preparation, and 45 **, a state of an oil-in-water type emulsion composition immediately after preparation, and 45 ** in accordance with the following valuation basis. An average dispersed particle diameter of 45 ** of an oil-in-water type emulsion composition and an emulsification system of one week after was also united and measured.
Average dispersed particle diameter measuring apparatus; Nikkiso Co., Ltd. Size distribution measuring device Micro track FRA 9220 type [0021](3) Valuation-basis O : an emulsified state is very good and the float of an oil phase, separation, etc. are not seen at all.
O : although the emulsified state is good in general, the float of few oil phases is seen.
**: Although the emulsified state is maintained, the float of some oil phase is seen.
x: Precipitate of the crystal of coenzyme Q_{10} is seen by a separation state.

The result of Embodiment 1 is shown in Table 1.
[0022]Preparing method comparative example 1 of a comparative example (1) sample -- Thing comparative example 2 which substituted other components for the oil phase component from the combination in Embodiment 1 -- [combination / in Embodiment 1] Thing comparative example 3 which substituted other components for the polyhydric alcohol -- The emulsification thing of the comparative example group was obtained from the combination in Embodiment 1 by the same emulsification method as Embodiment 1 by the combination which shows an emulsifier to the comparative example of the thing table 1 for which other components were substituted.

[0023](2) It evaluated like the valuation method embodiment 1. Similarly the result of a comparative example is shown all over Table 1.
[0024]
[Table 1]

表 1 (g)

成分		実施例1	比較例1	比較例2	比較例3
コエンザイムQ10		10	10	10	10
ショ糖酢酸イソ酪酸エステル		30	—	60	40
モノステアリン酸デカグリセリル		5	10	30	—
グリセリン		55	80	—	50
乳化組成物			乳化組成物		
評価	直後の乳化状態	◎	×	△	×
	45℃、一週間後の乳化状態	◎	×	×	×

乳化組成物10gに、精製水90mlを加えて得た水中油型乳化組成物					
評価	直後の乳化状態	◎	×	△	×
	45℃、一週間後の乳化状態	◎	×	×	×
	分散直後平均粒子径（μm）	0.15	0.68	0.96	0.73

[0025]By the combination shown in the two to embodiment 7 (method of preparation) table 2, it adjusted by the same emulsification method as Embodiment 1. As an oil phase, in addition to what was used in Embodiment 1, however, soybean oil (made in Nikko Chemicals), And bird (capryl lactam capric acid) glyceryl (made in Nikko Chemicals) and liquid paraffin (made by a union petroleum industry company) were also used, and if it was with the emulsifier, monomyristic acid decaglyceryl (made in Nikko Chemicals) was also used.
(Appraisal method) The same method as Embodiment 1 estimated.
[0026]
[Table 2]

表 2 (g)

成分 \ 実施例		2	3	4	5	6	7
コエンザイムQ10		10	1	20	10	10	15
トリ(カプリル・カプリン酸)グリセリル		20	—	—	20	—	—
ショ糖酢酸イソ酪酸エステル		10	15	20	10	10	20
大豆油		—	20	—	—	20	—
流動パラフィン		—	—	10	—	—	15
モノステアリン酸デカグリセリル		5	9	10	—	—	—
モノミリスチン酸デカグリセリル		—	—	—	5	5	5
グリセリン		55	55	40	55	55	45
乳化組成物							
評価	直後の乳化状態	◎	◎	◎	◎	◎	◎
	45℃、一週間後の乳化状態	◎	◎	◎	◎	◎	◎

乳化組成物に精製水 90ml を加えて得た水中油型乳化組成物							
評価	直後の乳化状態	◎	◎	◎	◎	◎	◎
	45℃、一週間後の乳化状態	◎	◎	○	◎	◎	○
	平均粒子径 (μm)	0.15	0.21	0.13	0.22	0.27	0.18

[0027]By the combination shown in the eight to embodiment 10 (method of preparation) table 2, it adjusted by the same emulsification method as Embodiment 1. As an oil phase, in addition to the above-mentioned thing, however, olive oil (made in Nikko Chemicals), Squalane (made in Nikko Chemicals) JIKAPURIRU acid propylene glycol (made in Nikko Chemicals) and monocaprylic acid sorbitan (made in Nikko Chemicals) were also used, and propylene glycol (made in Tokyo Chemicals) was also used as a polyhydric alcohol.
(Appraisal method) The same method as Embodiment 1 estimated.
[0028]
[Table 3](g)

表 3 (g)

成分＼実施例		8	9	10
コエンザイムQ10		5	1	0.5
大豆油		10		
オリーブ油			14	
スクワラン		10	10	
ジカプリル酸プロピレングリコール				9.5
モノカプリル酸ソルビタン				
ﾄﾘ(ｶﾌﾟﾘﾙ・ｶﾌﾟﾘﾝ酸)ｸﾞﾘｾﾘﾙ				20
ショ糖酢酸イソ酪酸エステル		20	25	10
モノミリスチン酸デカグリセリル		10	5	5
グリセリン		45	45	55
乳化組成物				
評価	直後の乳化状態	◎	◎	◎
	45℃、一週間後の乳化状態	◎	◎	◎

乳化組成物に精製水 90ml を加えて得た水中油型乳化組成物				
評価	直後の乳化状態	◎	◎	◎
	45℃、一週間後の乳化状態	◎	◎	◎
	平均粒子径（μm）	0.15	0.15	0.13

[0029]The emulsion composition was prepared by the same method as four to comparative example 8 (method of preparation) Embodiment 1.
(Appraisal method) The same method as Embodiment 1 estimated.
[0030]
[Table 4]

表 4 比較例 4～8 (g)

成分＼比較例		4	5	6	7	8
コエンザイムQ10		15	15	10	10	5
ﾄﾘ(ｶﾌﾟﾘﾙ・ｶﾌﾟﾘﾝ酸)ｸﾞﾘｾﾘﾙ				30	10	
ショ糖酢酸イソ酪酸エステル				20	40	
大豆油				15	15	65
モノステアリン酸デカグリセリル		15			10	30
モノミリスチン酸デカグリセリル			5	25	15	
プロピレングリコール			40			
グリセリン		70	40			
乳化組成物						
評価	直後の乳化状態	○	△	△	△	△
	45℃、一週間後の乳化状態	×	×	△	△	×

乳化物に精製水 90ml を加えて得た水中油型乳化組成物						
評価	直後の乳化状態	×～△	×～△	△～○	△～○	△
	45℃、一週間後の乳化状態	×	×	△	△	×
	平均粒子径（μm）	0.88	0.89	0.71	0.73	0.68

[0031]According to this invention, it turns out that the emulsion composition containing coenzyme Q_{10} in which an emulsified state is very stable, and an oil-in-water type emulsion composition are obtained

so that it may see in Table 1 and Table 2, 3, and 4.
[0032]The example of the oil-in-water type emulsion composition containing coenzyme Q_{10} is shown.

(Method of preparation) The emulsion composition was prepared by the same method as Embodiment 1.
(Appraisal method) The same method as Embodiment 1 estimated.
[0033]
Embodiment 11 : High concentration coenzyme Q_{10} emulsion-composition for medicines . a coenzyme Q_{10}20.0g bird (capryl lactam capric acid) -- glyceryl. [the emulsion composition 10g obtained by combination beyond 25.0g cane sugar acetic acid isobutyric acid ester 10.0g monomyristic acid decaglyceryl 8.0g glycerol 37.0g] When 90 ml of water was distributed, it could check that a good oil-in-water type emulsification dispersion system was obtained, and the emulsion composition of possible high concentration coenzyme Q_{10} content of using for the liquids and solutions of drugs, quasi drugs, and the feed for animals was obtained.
[0034]
Embodiment 12 : Coenzyme Q_{10} content emulsion-composition for cosmetics . a coenzyme Q_{10}4.0g bird (capryl lactam capric acid) -- glyceryl -- as an object for cosmetics beyond 8.0g cane sugar acetic acid isobutyric acid ester 2.0g monomyristic acid decaglyceryl 0.5g glycerol 85.5g. The hand cream was **(ed) using the emulsion composition which **(ed). First The behenyl alcohol 3g, the liquid paraffin 6g, and the trimethylsiloxy silicic acid 5g are warmed at 70 **, there -- 70 ** -- warming -- it added agitating 4 g of dissolved 1,3-butylene glycol, the glycerol 4g, and 10 g of xanthan gum (2% aqueous solution), and 10g of emulsified liquid which cooled and was obtained in the embodiment at 35 ** there was put in, and it mixed uniformly, and was neglected after homogeneity, and the hand cream was obtained.
[0035]
Embodiment 13 : Coenzyme Q_{10} content emulsion-composition for foodstuffs . a coenzyme Q_{10}30.0g bird (capryl lactam capric acid) -- glyceryl -- 20.0g cane sugar acetic acid isobutyric acid ester 15.0g monomyristic acid decaglyceryl 5.0g glycerol [ ] -- 30.0g was used for foodstuffs using this emulsion composition. The dry yeast 2g is mixed with 150 g of wheat flour (strong flour). Subsequently, 1 g of emulsified liquid, the sugar 20g, the salt 3g, and the skim milk powder 5g which were obtained in the embodiment are melted in the warm water 60g, an egg is added, it mixes well, is easy to add to wheat flour, and it is mixed. After kneading by hand well, about 35 g of butter was added, it kneaded well, and ten bread roll grounds were obtained. It was made to ferment, the egg was applied after that, and it put into oven, and burned for about 15 minutes, and the bread roll which about 30 mg of coenzyme Q10 contains in homogeneity per piece was obtained.
[0036]Embodiment 14 Manufacturing method of an emulsion-composition content soft capsule.
Using the sample of Embodiments 2 and 6 and the comparative example 2, it was filled up with about 300 mg and the soft capsule was obtained by the usual process so that coenzyme Q_{10} might contain 30 mg per capsule. Using the capsule, it examined by the disintegration test and the mean particle diameter of the particulate material was checked.
[0037]
[Table 5]

表5　カプセル崩壊試験結果

検　体	実施例2	実施例7	比較例2
平均粒子径（μm）	0.21	0.26	0.87

The result has checked that a good oil-in-water type emulsification dispersion system was obtained, when the capsule filled up with the emulsion composition was underwater distributed by decay examination. Therefore, distributing finely immediately, after drinking a capsule with water as it is and collapsing in the stomach, and it being quickly absorbed by alimentary canals, such as a small intestine, and getting is suggested.

[0038]Embodiment 15 Manufacturing method of an emulsion-composition content hard capsule. Using the hard capsule No. 1, it was filled up with the emulsion composition of Embodiment 1 so that a pipeter might be used for the body of a hard capsule and it might become about 300 mg of net weight, and the cap was inserted in after that, and the hard capsule which 30 mg coenzyme Q_{10} contains among 1 capsule was obtained.

[0039]A hard capsule is filled up with the emulsion composition of the absorption test embodiment 2 of coenzyme Q_{10}, and the comparative example 2, and the animal experiment result with which the beagle was medicated is shown below. Administration controlled the meal and sampled plasma for every definite period of time till after-administration 24 hours.

[0040]After having filled up the capsule with Embodiment 2 and the comparative example 2 so that one animal might hit the beagle of one groups [three] (male) and it might become a dose of 90 mg/dog, respectively, and carrying out single time forcible administration of the capsule, blood was extracted periodically and transition of the coenzyme Q_{10} concentration in plasma with the passage of time was investigated.

Measurement was performed on condition of the following using HPLC.

column: -- Nucleosil 5C18 4.6 mm * 25 cm mobile phase: -- ethanol: -- acetonitrile (55:45)

Rate of flow: 1 ml/min detecting element: A coenzyme in ultraviolet spectroscopy photometer 275-nm plasma Q_{10} density measurement result and a pharmacokinetic parameter are shown in Table 1.

[0041]

[Table 6]

表　6

	Cmax（μg／ml）	tmax（hr）	AUC（0→t）（μg・hr／ml）
実施例2	0.947±0.72	5.7±1.4	8.06±0.41
比較例2	0.562±0.61	6.4±1.8	6.10±0.56

（Mean±S. D）

Cmax（ng／ml）　……最高血中薬物濃度

tmax（hr）　……最高血中薬物に到達するまでの時間

AUC（0→t）（ng・hr／ml）　……血中薬物濃度－時間曲線下面積

[0042]

[Effect of the Invention]As explained in detail above, according to this invention, an oil-in-water type emulsion composition can be easily prepared by being able to obtain a polyhydric alcohol middle oil

type emulsion composition for coenzyme Q_{10} of high crystallinity at high concentration by poor solubility, and also adding water. According to this invention, it was checked that destabilization of the emulsified matter by crystallization of coenzyme Q_{10} can be prevented substantially, and also absorptivity can also improve. It became possible [a small amount of water] to obtain uniform clear emulsion liquid.

[Translation done.]